

REMARKS

Claim 1 is amended herein. Support for the amendment is found, for example, at page 10 in the third and fifth full paragraphs after formula (2).

Claims 1, 2, 5, 8-9 and 12-15 are pending before the Examiner. Claims 3-4, 6, 7 and 10-11 are deemed to be withdrawn by the Examiner.

I. Response to Claim Rejections under 35 U.S.C. § 103

Claims 1, 2 and 8 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takai et al (U.S. Patent No. 6,924,008); Yamamura et al (U.S. Patent No. 5,981,616); Watanabe et al (U.S. Patent 6,783,840) and Suzuki et al (U.S. Patent No. 6,498,200).

Claims 5 and 9 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the references as applied to the claims hereinabove, and further in view of Jansen et al (U.S. Patent No. 6,916,855).

A. The Present Invention

The present invention relates to a radiation curable resin composition comprising: a polyfunctional epoxy polymer (Component A) having a polybutadiene skeleton or a hydrogenated polybutadiene skeleton and two or more glycidyloxy groups in the molecule; an oxetane compound (Component B) represented by Formula (1) below and/or a compound in which an optionally branched alkyl group having 8 to 30 carbons has one epoxy group (Component C) having 8 to 30 carbons; and a cationic photopolymerization initiator (Component X), wherein a number of parts of Component A added is 25 to 45 parts by weight relative to 100 parts by weight of the total resin components.

Claim 1 recites a composition comprising (A), (B) **and/or** (C) and (X). Therefore, as described in the specification at page 5, lines 2-5, the composition of the invention may include as essential elements: (1) components (A), (B), and (X); (2) components (A), (C) and (X); or (3) components (A), (B), (C), and (X).

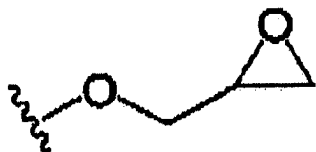
B. The Cited References

(1) Takai et al.

Takai et al. (col. 15, lines 23-29, invention No. 35) discloses an epoxidized polybutadiene (cols. 83-84, lines 11-13 and Table v-1, Example v-6, P8-3600).

An epoxidized polybutadiene is a compound which epoxidizes an ethylenically unsaturated bond of a polybutadiene, i.e., an epoxidized polybutadiene is a compound having (an) internal epoxy group(s).

In the present invention, Component A is a polyfunctional epoxy polymer having a polybutadiene skeleton or a hydrogenated polybutadiene skeleton and two or more glycidyloxy groups in the molecule. A glycidyloxy group is a structure as shown below, and is not an internal epoxy group.



Component A in the present invention is not an epoxidized polybutadiene.

Therefore, Takai et al. does not disclose Component A, and does not disclose a composition in which a number of parts of Component A added is 25 to 45 parts by weight relative to 100 parts by weight of the total resin components.

Takai et al. (col. 15, lines 23-29, invention No. 35) discloses a mono-oxetane compound shown by formula [1] (col. 87, lines 33-64). However, the mono-oxetane compound shown by formula [1] is a part of many oxetane compounds having 1-6 pieces of oxetane rings in the molecule described in cols. 87-92, and the oxetane compounds used in the working Examples are OXE-1 to 3 (col. 92, lines 1-20), which is not Component B in the present invention. Thus, Takai et al provide motivation for one of ordinary skill in the art to select Component B in the present invention.

Further, Takai et al. does not teach nor suggest Component C in the present invention.

(2) Yamamura et al.

Yamamura et al. discloses R-45 EPT (col. 9, line 27) and a compound prepared by the reaction of polybutadiene having hydroxyl groups at both terminals and epichlorohydrin (col. 9, lines 51 to 53). In the working Examples of Yamamura at al., only an epoxidated polybutadiene having internal epoxy groups (Epolead P8360) is used, and there is no example using a polyfunctional epoxy polymer having two or more glycidyloxy groups in the molecule.

Yamamura at al. does not teach nor suggest a composition in which a number of parts of Component A added is 25 to 45 parts by weight relative to 100 parts by weight of the total resin components.

Yamamura at al. discloses 2-ethylhexyl (3-ethyl-3-oxetanylmethyl) ether (col. 6, line 29). However, 2-ethylhexyl (3-ethyl-3-oxetanylmethyl) ether is one compound of many compounds having an oxetane ring described in col. 6, line 13 to col. 7, line 28, and in the working Examples of Yamamura at al. there is no example using Component B in the present invention. Thus,

Yamamura et al. does not provide motivation for one of ordinary skill in the art to select Component B in the present invention.

Further, Yamamura et al. does not teach nor suggest Component C in the present invention.

(3) Watanabe et al.

Watanabe et al. discloses an epoxidated polybutadiene (col. 7, line 48). However, Component A in the present invention is not an epoxidized polybutadiene as mentioned above.

Therefore, Watanabe et al. does not disclose Component A, and does not disclose a composition in which a number of parts of Component A added is 25 to 45 parts by weight relative to 100 parts by weight of the total resin components.

In addition, a compound having at least one oxetanyl group described in col. 7, line 66 to col. 8, line 2 of Watanabe et al. is not the oxetane compound represented by Formula (1) (Component B) in the present invention.

Further, Watanabe et al. does not teach nor suggest Component C in the present invention.

(4) Suzuki et al.

Suzuki et al. discloses an oxirane ring-containing polybutadiene (col. 2, line 42) and 3-ethyl-3-hexyloxymethyloxetane (col. 3, lines 63-64). However, in the working Examples of Suzuki et al., there is no example using Component A in the present invention and/or Component B in the present invention.

Suzuki et al. does not teach nor suggest Component C in the present invention.

Moreover, Suzuki et al. does not teach nor suggest a composition in which a number of parts of Component A added is 25 to 45 parts by weight relative to 100 parts by weight of the total resin components.

(5) Jansen et al.

Jansen et al. discloses an epoxidated polybutadiene (col. 22, lines 33-34). However, Component A in the present invention is not an epoxidated polybutadiene as having mentioned above.

Therefore, Jansen et al. does not disclose Component A, and does not disclose a composition in which a number of parts of Component A added is 25 to 45 parts by weight relative to 100 parts by weight of the total resin components.

In addition, a mono-oxetane compound described in col. 22, lines 35-37 of Jansen et al, is not the oxetane compound represented by Formula (1) (Component B) in the present invention.

Jansen et al, does not teach nor suggest Component C in the present invention.

In view of the above, none of the references teaches or suggests all elements of the present invention. Thus, even if combined the present invention would not have been achieved. Therefore, for at least this reason the present invention is not rendered obvious over the cited references, whether taken alone or in combination.

C. Advantageous effects of the present invention

An object of the present invention is to provide a radiation curable resin composition that gives a cured material having excellent resilience after deformation while having a low modulus of elasticity, and having excellent adhesion to substrate.

These advantageous effects of the present invention are not disclosed in the citations (Takai et al., Yamamura et al., Watanabe et al., Suzuki et al., and Jansen et al.), and are unexpected by an ordinary artisan.

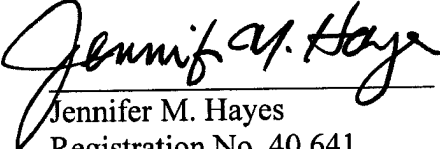
These surprising effects are provided by the distinguishing feature of the present invention and these surprising effects are not derivable from the citations. Thus, for this additional reason, the present invention is patentable over the cited references.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


Jennifer M. Hayes
Registration No. 40,641

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: July 24, 2007